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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/391,250	09/07/1999	KAZUYOSHI TORII	520.37546X00	8298

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ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON, VA 22209

EXAMINER

NGUYEN, CUONG QUANG

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 01/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/391,250

Applicant(s)

TORII et al.

Examiner

CUONG Q NGUYEN

Group Art Unit

2811

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE Three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☐ Responsive to communication(s) filed on 10-25-01
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-28 is/are pending in the application.
- Of the above claim(s) 5-6, 12-13, 19-28 is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-4, 7-11, 14-18 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

Art Unit: 2811

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-11, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fazan (US 5,478,772) in view of Okudaira et al. (US 5,418,388).

Fazan discloses a semiconductor device comprising: a substrate (7); a transistor formed on the substrate; an interlayer insulating film (40) having an opening formed on the substrate and the transistor; a conductive film (65) formed in the opening; a capacitor including a first electrode (85), a ferroelectric film (90, a PZT or BST, or PLZT layer) on an upper surface of the first electrode and in contact to side surfaces of the first electrode, and a second electrode (16) on the ferroelectric film; a diffusion barrier layer (75, a Ta layer) formed in the opening between the conductive film and the first electrode, wherein the ferroelectric film is not in contact with the barrier diffusion film. See Fazan's Fig.11A.

Fazan does not teach a reaction barrier layer formed between the interlayer insulating film and the ferroelectric film and between the lower surface of first electrode and insulating film.

Art Unit: 2811

Okudaira et al. discloses a semiconductor device comprising: a reaction barrier layer (11) formed between an interlayer insulating film (10) and the ferroelectric film, and between a lower surface of a first electrode (14) and insulating film.

It would have been obvious to one of ordinary skill in the art to incorporate the reaction barrier layer formed between the interlayer insulating film and the ferroelectric film, and between the lower surface of first electrode and insulating film as taught by Okudaira et al. in order to serve as an adhesion layer between the layers above the insulating film and the interlayer insulating film (see Okudaira et al.'s col.9, lines 8-16).

Response to Arguments

2. Applicant's arguments with respect to claims 1-4, 7-11 and 14-18 have been considered but are not persuasive.

Applicants argue that none of applied references teaches that a reaction barrier layer formed between the interlayer insulating film and the ferroelectric film and between the lower surface of first electrode and insulating film. In response, as discussed above, Okudaira et al. clearly teaches that a reaction barrier layer formed between the interlayer insulating film and the ferroelectric film and between the lower surface of first electrode and insulating film.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2811

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

5. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to CUONG Q NGUYEN whose telephone number is (703) 308-1293. The Examiner is in the Office generally between the hours of 6:30 AM to 5:00 PM (Eastern Standard Time) Monday through Thursday.

Serial Number: 09/391,250

Page 5

Art Unit: 2811


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor TOM THOMAS who can be reached on (703) 308-2772. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722 or 308-7724.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center Receptionists whose telephone number is 308-0956.

CN

January 7, 2002

Steven Loke
Primary Examiner

A handwritten signature in cursive script that reads "Steven Loke".